

1 Attorney Docket No. 84454

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OPTICAL FIBER COUPLER

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The present invention is a continuation-in-part of U.S.

J.D. 5 Application, ^{10/251,693}~~10/231,693~~, filed 17 September 2002, ^{now U.S. Patent 6,609,836,} in the names of

02/08/07 6

Lynn T. Antonelli and Patrick J. Monahan.

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STATEMENT OF GOVERNMENT INTEREST

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The invention described herein may be manufactured and used

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by or for the Government of the United States of America for

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Governmental purposes without the payment of any royalties

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thereon or therefor.

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BACKGROUND OF THE INVENTION

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(1) Field of the Invention

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The invention relates to fiber optic elements and is

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directed more particularly to an optical fiber coupler wherein

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fiber optic elements are coupled so as to provide a physical and

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optical connection therebetween.

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(2) Description of the Prior Art

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Fiber optic strands typically include a central region in

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which light propagates, a cladding region to contain the light

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within the central region, and customarily a protective jacket.

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It is generally known to consolidate light carried in a group of

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fiber optic strands into a single strand, and, conversely, to

1 element. However, in the case of fiber optic elements 40 and 50
2 each consisting of a single fiber optic element, the free ends
3 44, 52 may be spaced as close as is practical.

4 Light exiting either the first or second fiber optic
5 elements 40, 50 is propagated out of the appropriate strand end
6 or ends 44, 52. Light exiting the selected element is
7 transported through the cured optically transparent resin 60
8 towards the receiving fiber optic element.

9 The coupler described hereinabove provides a connection
10 which allows light to be coupled from a group of optical fiber
11 strands into a single strand or several other strands, or from a
12 single strand into another single strand or into a plurality of
13 strands. Further, it is to be understood that an n-by-n coupler
14 may be provided. The first and second fiber optic elements 40
15 and 50 in an n-by-n coupler each comprise a plurality of strands.
16 Such n-by-n couplers find utility in linear arrays of pulse
17 responsive, 2-mode, in-line within a fiber, Fabry-Perot

18 interference cavity sensors, which are disclosed in U.S. Patent
19 Application Serial Number 06/795,843, filed ⁴5 September 1985, by

20 Eugene Green et al, entitled "Pulse Sample Optical Fiber
21 Hydrophone Array". In the type of hydrophone array systems which
22 employ pulse-responsive, 2-mode, interference cavity fiber
23 sensors as their individual hydrophone elements, one of the
24 strands of first fiber optic element 40 propagates pulses to a
25 plurality of strings of fiber sensors connected to respective